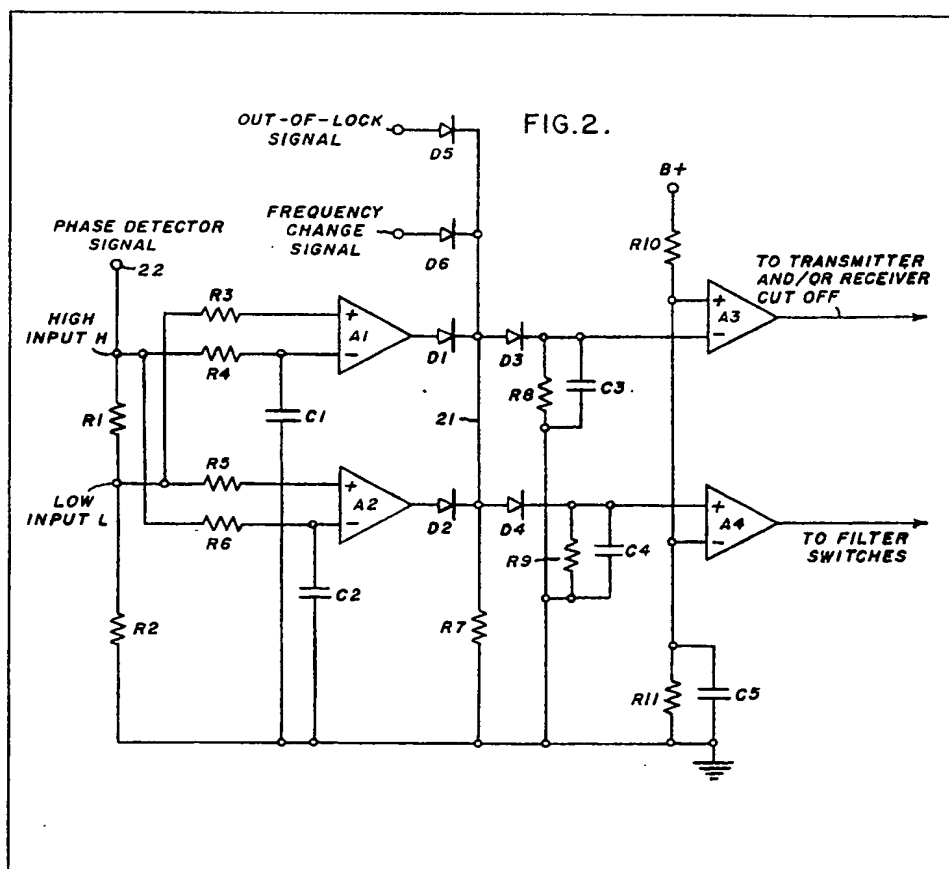


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(54) Control circuits for phase locked loops

(57) Control signals (A4) for switching the bandwidth of a filter in a phase locked loop are provided by comparator circuits (A1,A2) having time delays (C1,C2) at their inputs that vary as a function of the magnitude of changes in the output from a phase detector. These variable time delays permit the comparator circuits to produce an output having a duration of the proper length in order to permit the filter to have a large bandwidth for a long enough time to permit the phase locked loop to become locked. When the time delay expires the loop filter returns to its previous narrow bandwidth. The wide filter bandwidth allows rapid locking of the loop to a new frequency. An associated transmitter may be cut off (A3) during the period of wide bandwidth.



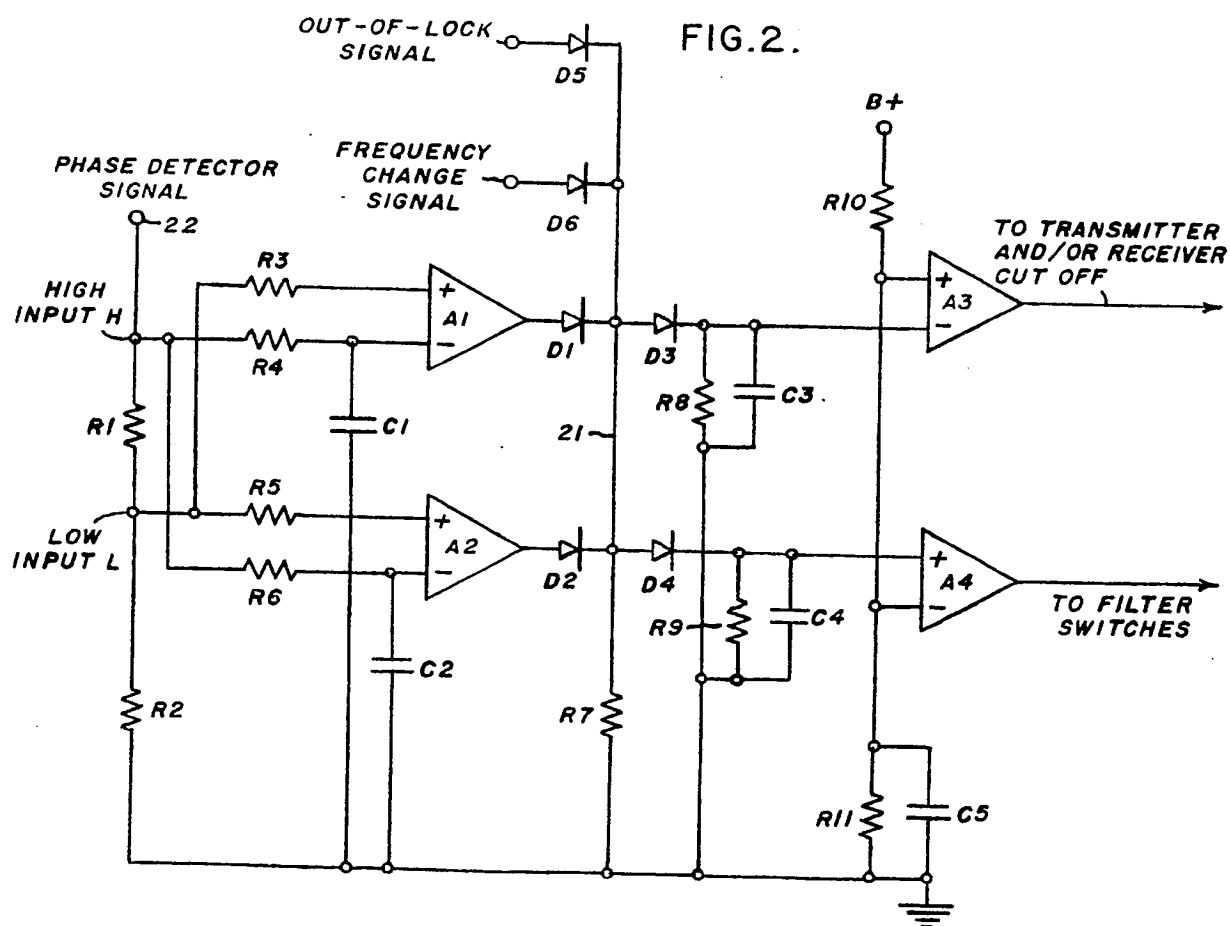
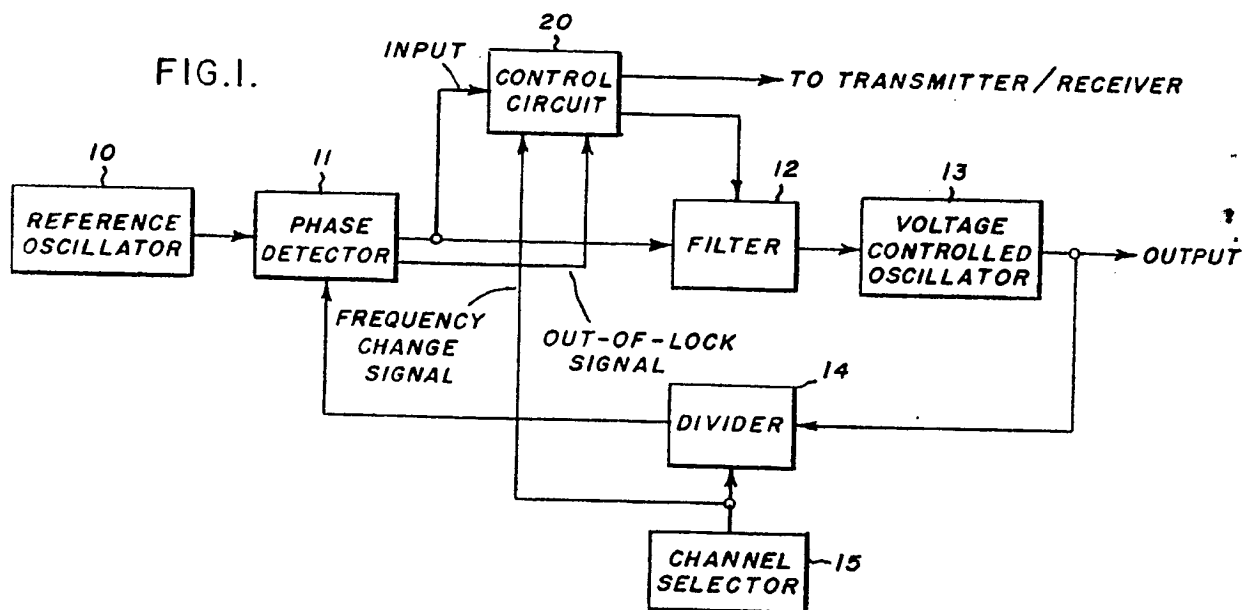
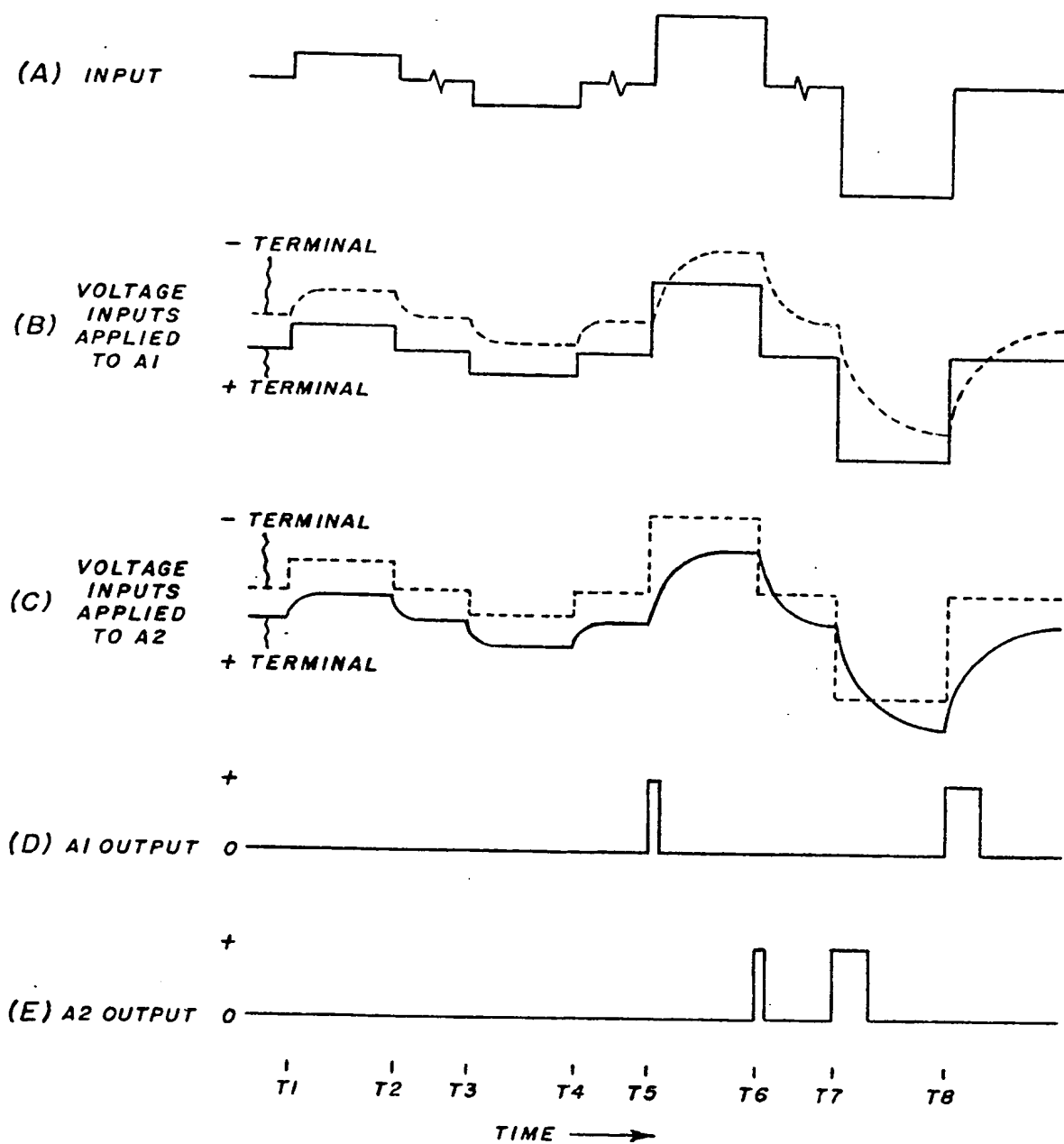


FIG.3.



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